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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,142	01/22/2004	Jun Ye	213.003-D2	6413

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EXAMINER	
RAYMOND, EDWARD	

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 08/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/763,142	YE ET AL.	
	Examiner	Art Unit	
	Edward Raymond	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *51-115* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *71-115* is/are allowed.

6)☒ Claim(s) *51-56,61 and 66* is/are rejected.

7)☒ Claim(s) *57-60,62-65 and 67-70* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20040506, 20040524*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. **Claims 51-56, 61, and 66** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wataya in view of Avanzino et al.

Wataya teaches a unit for use in sensing a parameter of a surface structure that is formed by integrated circuit processing equipment which is used to manufacture an integrated circuit, the unit comprising: a substrate having a wafer-shaped profile (Claim 51: see paragraph 25, lines 1-6); and a plurality of sensors, disposed on or in the substrate (Claim 51: see paragraph 25, lines 1-6), to sample the process parameter of

the surface structure that is formed above the sensors (Claim 51: paragraph 12, lines 1-22).

Wataya teaches an unit wherein the plurality of sensors includes a plurality of light sensors (Claim 52: see paragraph 32, lines 1-6) and wherein the further includes a predetermined surface layer disposed on the and above the plurality of light sensors wherein the predetermined surface layer is capable of receiving a surface structure thereon (Claim 52: see paragraph 32, lines 1-6).

Wataya teaches a unit wherein predetermined surface layer includes a plurality of layers (Claim 53: see paragraph 12, lines 1-22).

Wataya teaches a unit of wherein the plurality of layers includes a composite dielectric structure (Claim 54: see Figure 1: 1A: The Examiner notes that a dielectric structure is inherent in a integrated circuit design).

Wataya teaches a unit wherein the predetermined surface layer is patterned to guide or shape the light sampled by the plurality of light sensors (Claim 55: see Figure 1A: Transparent Layer 6 and paragraph 34, lines 1-7).

Wataya teaches a unit wherein the predetermined surface layer includes a grating structure having a refractive index (Claim 56: see Figure 1A: Transparent Layer 6: The Examiner notes that the transparent layer inherently refracts light and has a refractive index).

Wataya teaches a unit wherein the plurality of sensors light sensors sample light that is includes a plurality of light sensors and wherein the reflected or scattered by the

surface structure formed by the integrated circuit processing equipment during processing (Claim 61: see paragraph 12, lines 1-22).

Wataya teaches a unit further including wherein the plurality of light sensors is CMOS devices, charge coupled devices, or photodiodes (Claim 66: see paragraph 36: The Examiner notes that a camera uses one or all of the above sensors).

Wataya teaches all of the features of the claimed invention, except a unit comprising the method to sample the process parameter of the surface structure that is formed by the EIW unit by the integrated circuit processing equipment during processing. Avanzino et al. teach sampling the process parameter of the integrated circuit processing equipment during processing (Claim 51: see col. 2, lines 58-66). It would have been obvious to the person having ordinary skill in the art at the time the invention was made to modify Wataya to sample the processing equipment during processing, as taught by Avanzino et al., because this process would allow for precise characterization and control of the manufacturing process when fabricating devices on a micro-miniature scale (See Wataya, paragraph 9, lines 1-7).

Allowable Subject Matter

1. **Claims 57-60, 62-65, and 67-70** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

2. **Claims 71-115** are allowed.

3. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach a method of measuring a process

parameter of a surface structure that is formed by an integrated circuit manufacturing process wherein the method comprises placing the substrate in the integrated processing circuit processing equipment; enabling the plurality of sensors to sample the process parameter of the surface structure; sampling the process parameter of the surface structure using the plurality of sensors; and determining the process parameter of the surface using data from the plurality of sensors.

The prior art of record also does not teach a system wherein the sensor samples the process parameter while or after the unit is subjected to processing by the integrated circuit processing equipment and a computing device to receive the samples from the sensor and determine the process parameter of the surface structure using the samples.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ohashi teaches a solid-state image pick-up device.

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Raymond whose telephone number is 571-272-2221. The examiner can normally be reached on Monday through alternating Friday between 8:00 AM and 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on 571-272-2216. The fax phone numbers for

the organization where this application or proceeding is assigned are 571-273-2221 for regular communications and 571-272-1562 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Edward Raymond
[redacted] Patent Examiner

August 17, 2004
Edward Raymond
Patent Examiner
Art Unit 2857